THE EFFECT OF DIGITALISATION ON YOUTH EMPLOYMENT

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List of Acronyms

AI	Artificial Intelligence
COVID-19	Corona Virus Disease 2019
CSO	Civil Society Organization
DLGs	District Local Governments
DSS	Digital Science Software
DSVL	Digital Science and Virtual Laboratories
DTP	Digital Transformation Program
DUV	Digital Uganda Vision
FY	Financial Year
GCI	Global Connectivity Index
ICT	Information and Communication Technology
IDPs	Internally Displaced Persons
MDA	Ministries, Departments and Agencies
MM	Mobile Money
MoES	Ministry of Education and Sports
MSME	Micro Small Medium Enterprises
MTN	Mobile Telecommunication Network
NBI	National Backbone Infrastructure
NDP	National Development Plan
NEET	Not in Education, Employment, or Training
NLFS	National Labour Force Survey
NPA	National Planning Authority
NPC	National Population Council
NPHC	National Population and Housing Census
OECD	Organization for Economic Co-operation and Development
OTT	Over the Top Tax
PDA	Personal Digital Assistant
RAHU	Reach A Hand Uganda
RID	Research for Industrial Development
SSA	Sub Saharan Africa
SSTI	Space Science and Technology Infrastructure
TV	Television
TVET	Technical Vocational Education and Training
UBoS	Uganda Bureau of Statistics
UCC	Uganda Communications Commission
UDTR	Uganda Digital Transformation Roadmap
UIA	Uganda Investment Authority
UIICT	Uganda Institute of Information and Communication Technology
UNFPA	United Nations Population Fund
UNICEF	United Nations International Children's Emergency Fund
USAID	United States Agency for International Development
VLS	Virtual Laboratories Software

Key words:

Youth employment: All Ugandans aged between 18 and 30 years who, during a period of one week preceding the date of NLFS, were engaged in any activity to produce goods or provide services for others in exchange for pay or profit.

Youth unemployment: The share of the labor force aged 18 – 30 years without work but available for and seeking employment.

Information and Communications Technology (ICT): The use of computing and telecommunication technologies, systems and tools to facilitate the way information is created, collected, processed, transmitted and stored.

Digitalization: The use of digital technologies and interconnection that leads to new or changes to existing activities.

Digital technology: The use of advanced information and communication technology to collect, store, analyze and share physical information and market information in each link of the product value chain, providing important technical support for innovation in various fields.

Digital transformation: The integration of digital technology into all areas of a business, fundamentally changing how you operate and deliver value to customers.

Abstract

The population of Uganda aged between 18 and 30 was 22.5% by 2014 when the last Census was conducted in 2014. At the current rate of growth, by 2050, the number of youths living in Uganda will have increased to 21 million. This youth population has the potential to accelerate the demographic dividend if effectively harnessed, however the multidimensional challenges they face continue to persist. The 2021/22 National Labor Force Survey indicated 41% of youth are neither in education, employment or receiving training. The employment to population ratio among youth is as low as 37.4% with a higher percentage of males (46%) than females (30%). Vision 2040 and NDP III recognize ICT as an avenue to increase household incomes and offers an opportunity for especially the youth to be more innovative and engage more actively in job creation through entrepreneurship. Government has invested in ICT services across the country to ensure access and affordability. This is through prioritizing education and introduction of ICT at different levels of learning.

The study explored the extent to which digitization enhances youth employment in Uganda; the strategies to ensure accessibility and affordability of ICT services, as well as the facilitating and constraining factors. A desk review of national and online international documents was conducted and secondary quantitative data from the National Labour Force Survey and the Digital DataRe Portal was analysed. The results revealed that increasing access to internet coverage, training, mentorships and hands-on skills development through the ICT have boosted job creation and changed mindsets of youth on the current job opportunities. Youth have embraced mobile money transactions, online meeting and training platforms and used different social media platforms to transact business and enterprises. A few challenges prevail but would be overcome by increasing internet coverage to reduce data tariffs and the costs of doing business; enhancing skills development; partnering with the private sector and changing mindsets of youth towards ICT.

1.0 Introduction

Uganda's population according to the 2014 National Population and Housing Census (NPHC) was 34.6 million people with nearly a quarter (22.5%) (UBOS, 2016) of the total population aged between 18 and 30 years. At the current rate of population growth of 3.03%, projections show that the population increased to 44.2 million in 2021 (UBOS, 2022) and that by 2050, the number of youths living in Uganda will have increased to 21 million (UBOS, 2018). Over time, both the population and the labor force (working age population) as a whole, have increased. The overall labor force increased from 18.8 million in 2016/17 to 19.3 million in 2017/18 (UBOS, 2018) and then to 23.4 million in 2021/22 (UBOS, 2021). However, the proportion in employment has decreased over the years from 62% in 2017/18 to 49% in 2021/22 (UBOS, 2021). A faster rate of labor force growth than overall employment growth suggests that unemployment, especially among young people is increasing. The 2021/22 National Labor Force Survey indicates that 41% (9.3 million) youth are neither in education, employment or receiving training (NEET). Accelerated investment in job creation for these youth therefore, remains a pertinent concern. By encouraging skills development and boosting access to information and resources, digital transformation offers a wide range of opportunities to improve youth employment.

Digitalisation according to the Organisation for Economic Co-operation and Development is the use of digital technologies and interconnection that leads to new or changes to existing activities (OECD, 2019). Uganda's Vision 2040 recognizes the contribution of ICT in economic diversification and transformation of the economy (NPA, 2013). The third National Development Plan (NDP) III also positions digital transformation as an integral programme to increase household incomes and improve the quality of life of Ugandans. The COVID-19 pandemic led to accelerated use of digital platforms in communication, business, service delivery and enterprises. Digitalization has thus proved to be key in business management with more digital and virtual tools in use to enhance job creation. With Artificial Intelligence for example introducing a new dimension to automation generation, digital transformation offers an opportunity for youth to be more innovative and engage more actively in job creation (AUC/OECD, 2021).

1.1 Problem Statement

Whereas the young population in Uganda is seen as a threat due to high dependency and unemployment, from a demographic dividend lens, if the youth are leveraged in the right way, there is great potential for significant economic growth and increased productivity through youth employment (NPC, 2018). Digital transformation is one of the prevailing opportunities for youth employment through economic growth and development (Signé, 2022). It is known for reducing production costs for businesses, improving productivity and earnings, the development of new business lines, and the provision of a wealth of new and accessible opportunities for young people (Signé & Fox, 2021). Across Africa, digital solutions are becoming increasingly important, with an estimated 230 million jobs in Sub-Saharan Africa (SSA) alone needing digital skills by the end of the decade (Charles Howard, 2023). However, skills deficiencies and a lack of basic digital skills to use technology to solve real-life problems that are key for life-long learning in the digital world and higher-level digital skills development in the future, are failing to be equitably accessed.

Despite the challenges standing in the way to technological evolution in Uganda, Ugandans of all ages, and more so, youth and the millennials, are struggling to embrace ICT in business transactions, especially, mobile money use in transacting business. Digital adoption among youth is however, highly uneven across income, gender, geographical situation and education groups. It is therefore, important to understand what facilitates utilization of digital technology among youth in Uganda, highlight prevailing opportunities and challenges and generate solutions to improving digitalization for youth employment and wealth creation.

2.0 Objectives

The overall objective of this study is to establish the extent to which digitization enhances youth employment in Uganda and the strategies in place to ensure accessibility and affordability of ICT services to the youth. The specific objectives are:

1. To identify determinants to using of digital technology among youth in Uganda.
2. To establish the relationship between digital transformation, and youth employment.
3. To examine the level of utilization and establish opportunities and challenges of digital technology among youth in Uganda.

3.0 Methodology

The study was mainly quantitative in nature. While there was no primary data collected for the study, the study team obtained secondary data from a meta-data set of the 202021/22 Labour Force

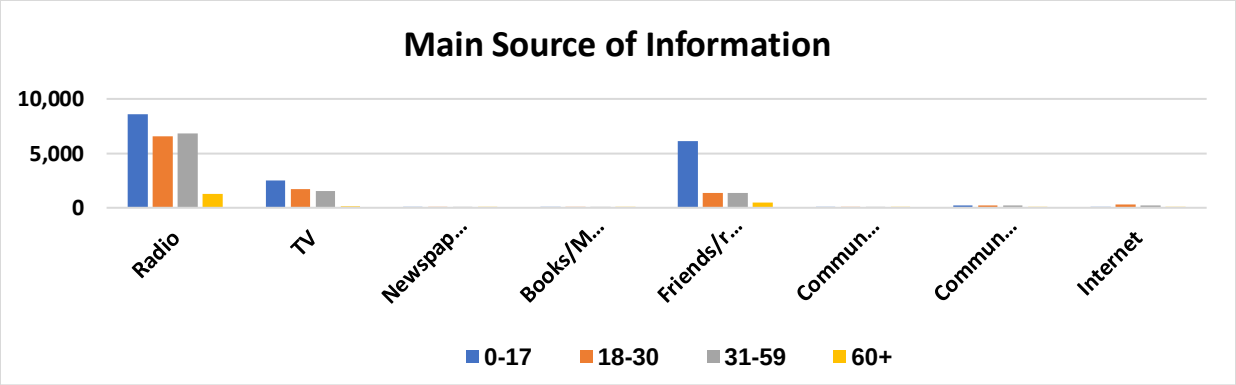
Survey and data from Uganda's Digital DataRe Portal. The study team reviewed relevant reports, annual workplans and budgets from Ministries, Departments and Agencies as well as credible sources at international level to help make a case for digitization and youth employment. The secondary data was first transposed into Excel to generate frequencies, which were used to produce comparable graphs and charts that have been used and referenced to assess the effect of digitalization on youth employment while identifying the facilitating and constraining factors, as well as prevailing opportunities and challenges to using digital technology. The findings were presented in the draft report for review. Feedback on the draft report was incorporated to finalize the report.

4.0 Findings and discussion

4.1 Access and availability of ICT Services among youth in Uganda

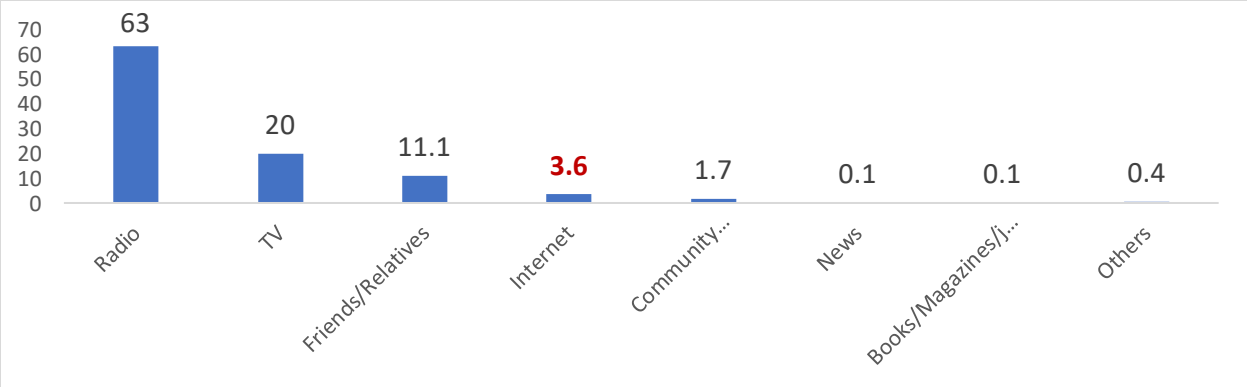
Uganda developed the Uganda Vision 2040 outlining commitments to accelerate digital transformation and provide support to all sectors of the economy. This was followed by Uganda's Digital Transformation Roadmap, which builds on commitments set under the Digital Uganda Vision to achieve operational momentum and make great strides that translate from paper to action. The Global ICT Development Index rates Uganda below the general average of nationwide telephone penetration in Africa of 74.60 per 100 inhabitants, while on the Global Connectivity Index, the country is rated at position 77 out of 79 profiled countries (Huawei Technologies Co., 2020). Even though the country's internet penetration rate is at an average of 43% due to limited infrastructure, the number of registered internet users has steadily grown over the years to over 20 million (NewVision, 2020). However, there are still fewer users (almost insignificant number) of internet countrywide, who use internet as source of information. Majority of Ugandans get information from radio, Television and friends or family (see figure 1, below). However, when the same data for source of information is disaggregated for age, refer to Figure 2, a small proportion of youth (3.6%) were using internet but it is important to note that internet use in the country is more common among the youth aged 18 – 30 years.

Figure 1: Main source of information



Source: National Labour Force Survey 2021/22

Figure 2: Main source of Information, Youth (18-30), NLFS 2021



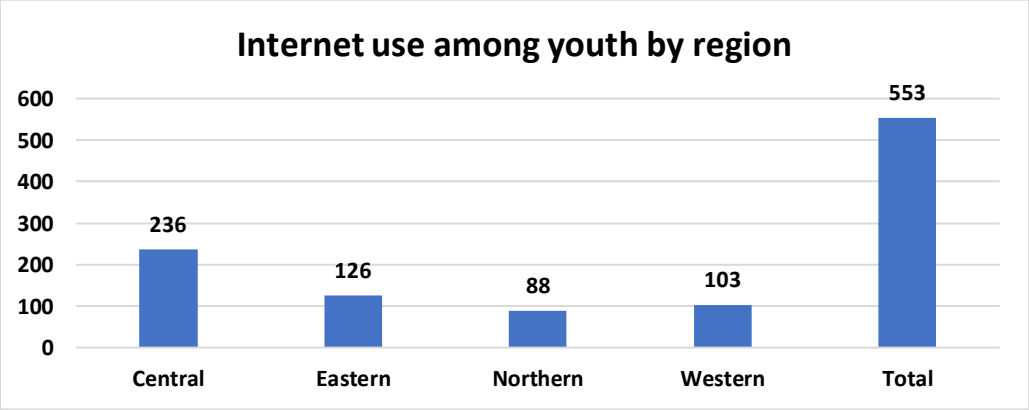
Source: National Labour Force Survey 2021/22

4.1.1 Country wide ICT coverage and upgrading

Government has extensively developed ICT infrastructure countrywide to raise the national coverage and increase universal internet access as well as better connectivity. In FY2021/22, Government connected two hundred sixty-four (264) additional MDAs/DLGs and target user sites to the National Backbone Infrastructure (NBI). Total internet subscriptions for the first time crossed the 22 million - mark at the end of September 2021, translating into a broadband penetration rate of 52 percent. Government upgraded ICT services by prioritizing introduction of ICT in lower and higher institutions of learning, strengthening public private partnerships to sustain investments in ICT infrastructure, abolishing the Over the Top (OTT) tax on the use of social media services, among others.

The data from UBOS (figure 3 below) indicates regional disparities in the use of internet among youth across the four regions of the country. More youth in the central part of the country (43%) accessed internet compared to less than one quarter (18%) of youth in western Uganda. Youth in Northern Uganda were least privileged to using internet as only 16% accessed and used internet. There are also gender disparities with more males (40.1%) than females (59.9%) accessing internet. The gap between women and men, and between urban and rural dwellers increased at the time when demand for the internet increased across the world as people sought to mitigate the risks associated with COVID-19 and economic fall out of the lockdowns. The 2022 After Access survey indicates that the main reasons for Ugandans being unable to access internet relates to lack of awareness and knowledge of the Internet; higher cost of data tariffs (due to limited internet penetration); and lack of affordable smart devices, all of which are more common in rural areas and among the females. Across the East African region, Uganda

Figure 3: Internet use among youth by region



Source: National Labour Force Survey 2021/22

Use of standard software packages is challenging for youth residing in rural areas since most of them do not have digital learning in schools as compared to those in urban areas. There are also cultural differences between rural and urban areas that affect digital technology with the rural people having conservative traditions which may be a hinderance to use of digital technology among youth (Niyigena, Jiang, Ziou, Shaw, & Hasan, 2020). It is also important to note that in terms of access, income and education remain the significant predictors of the use of ICT, therefore, higher use among the central compared to the other regions.

4.1.2 Commercialization of ICT and Enhanced Research and Development

The National Information Technology Authority Uganda (NITA-U) constructed and equipped Innovation Hubs and Business Process Outsourcing (BPO) Centers across the country to promote technology innovation and create employment opportunities for the youth. Through the hubs, Innovators are facilitated with grants to enhance skills development, develop innovative solutions to local challenges and are supported to compete in the global market, thus creating employment opportunities and increasing the number of innovators and jobs. In addition, government provided an environment for innovators to thrive through the development of an Artificial Intelligence Blueprint to promote the development and adoption of emerging technology Solutions. Government launched its first satellite into the international space and is expected to increase private sector investment in space science, technology research and innovation. Partnership with the private sector will be crucial in driving new technologies among the youth. The Government has also established regional ICT hubs across the country where youth can be accommodated to develop their ideas into solutions to help youth in job creation. These include Mbarara University, Muni University, Makerere University, Innovation village -Ntinda, Soroti University and Makerere University Business School.

4.1.3 ICT Human Capital

To create a competent human resource, government prioritized a number of interventions including developing a well-grounded ICT professional workforce; developing an ICT professional's quality assurance framework; providing digital literacy training; developing ICT centres of excellence; and reviewing and implementing ICT training curriculum at all levels of education system. 708 students are enrolled for Uganda Institute of Information and Communications Technology (UICT) diploma and certificate courses every academic year against a target of 1,500 students per year. The enrolment is still low compared to the number of youths who should be enrolled. Besides, the enrolment is still below the annual target, which hinders the creation of the annually targeted 30,000 jobs within the ICT sector.

4.2 Digitalization and youth employment

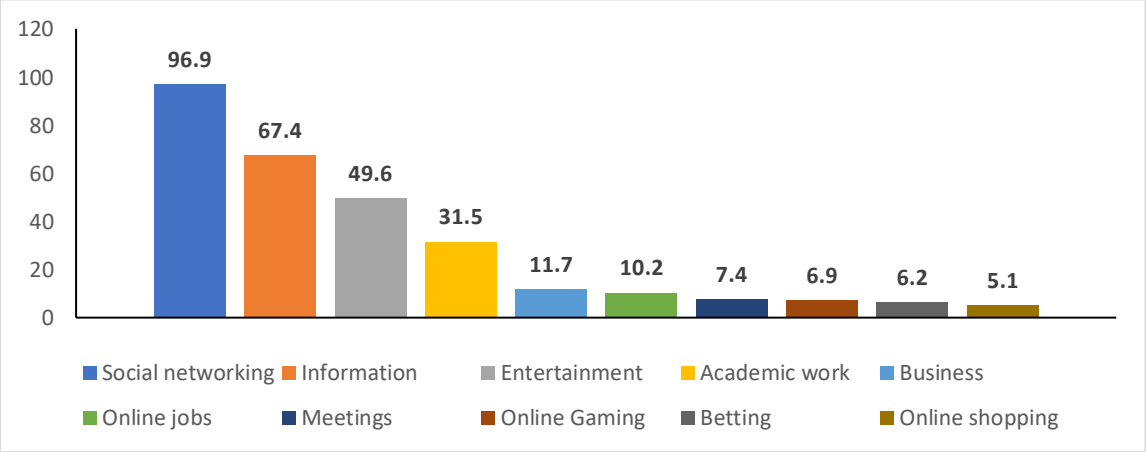
This section identifies how digitalization can facilitate rapid expansion of youth entrepreneurship. Youth are likely to use technology to create their own jobs rather than relying on others to create

chances for them as they join the labour market and digital technology becomes more pervasive. Youth are developing and running their own businesses, whether it's through smartphone apps for digital start-ups or Internet kiosks for maintaining and repairing technology and as social media influencers. There are limitations because of lack of public understanding and mistrust of the benefits of entrepreneurship, which prevents many youths from starting their own companies.

4.2.1 Why use the internet?

There are different reasons for using the internet as shown in figure 4. Among these are; social networking, searching for information, entertainment (music and videos) transacting business and online financial transactions, shopping, gaming meetings and much more. More youth aged 18 – 30 years (19.3%) used internet compared to the other age groups of the population.

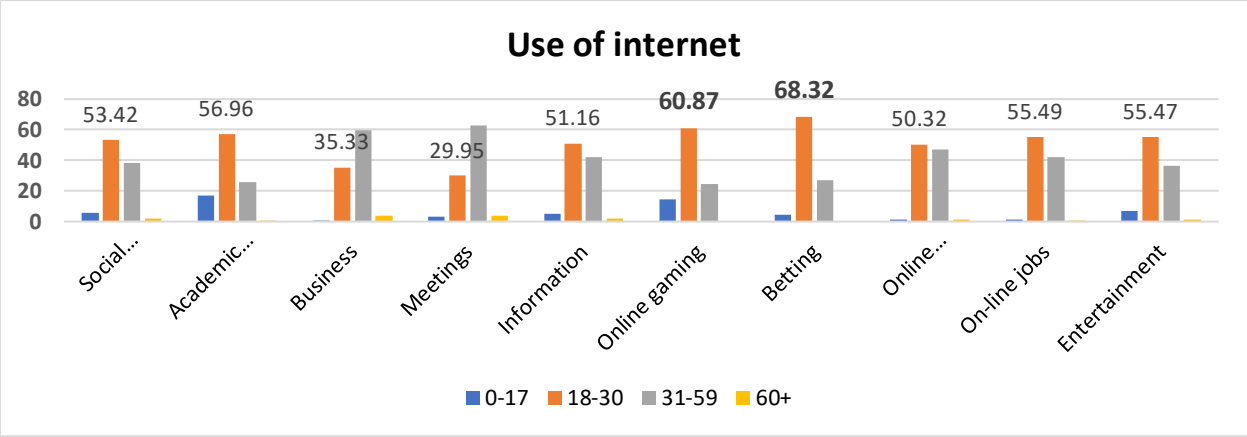
Figure 4: Avenues through which internet is used



Source: National Labour Force Survey 2021/22

Whereas most internet users, access internet for social networking (96.9%), more than two thirds of the youth (68.3%), use internet for betting and online gaming (60.9%), respectively. Refer to figure 5 below. More than half of the youth (57%) use internet to pursue their academic aspirations, which would ultimately boost employability. Other youth access internet in search of online jobs (55.5%) and an equally same number of youth (55.5%) use internet for entertainment. Fewer youth (only 35%) use the internet for business. This could be because of the limited access to internet, Smart phones and limited uptake and appreciation of e-commerce and online enterprises.

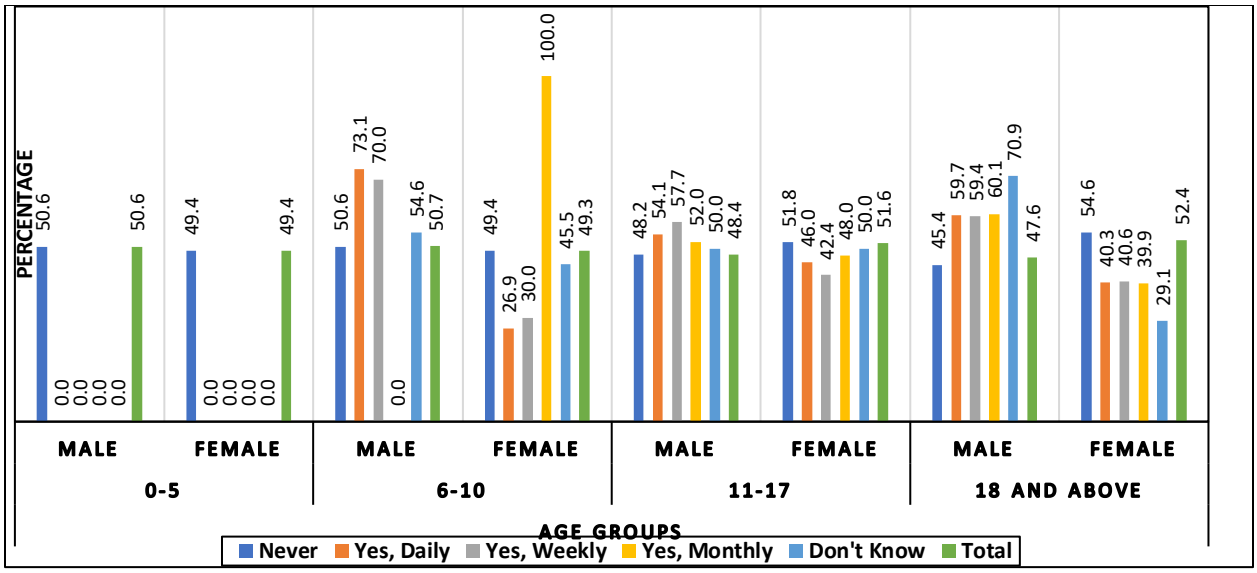
Figure 5: Purpose for which Ugandans used internet



Source: National Labour Force Survey 2021/22

In addition to what internet is used for, during the execution of the National Labor Force Survey, respondents were asked how often they use internet. As indicated in Figure 6 below, majority of the youth used internet more regularly and frequently compared to the children below 18 years. Only less than one quarter of youth aged 18 – 30 years never used internet at all, compared to close to half (47.6%) of those aged below 18 years. Still more than half of the youth accessed and utilized internet on a daily basis compared to only 7% among children below 18 years. This is because of limited access to smart phones and the policy restrictions to most of the internet sites such as Instagram, Twitter, YouTube, Facebook, etc. for children below 18 years.

Figure 6: Frequency of internet use by age group



Source: 2021 National Labour Force Survey

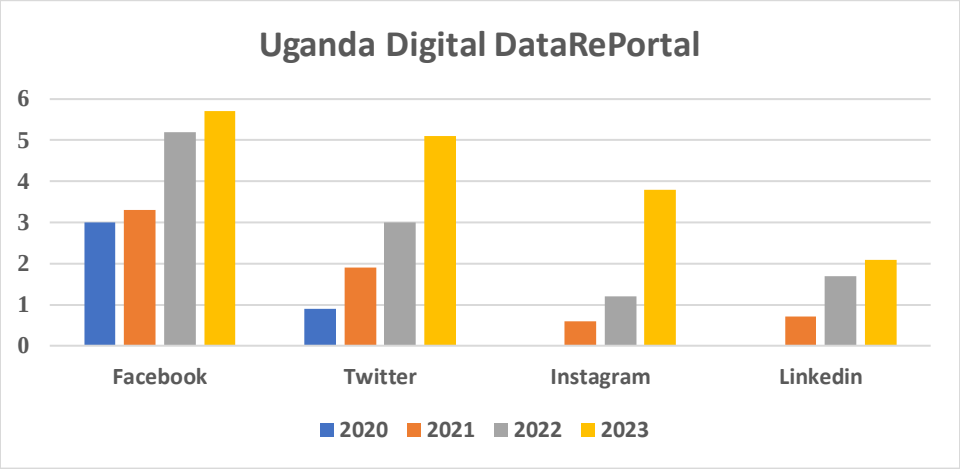
4.2.2 Virtual meetings and learning platforms

Global virtual business meetings and training programmes such as Skype, Zoom, Google Meet, and Microsoft Teams that offer features to engage with teams and collaborate from a distance have contributed to youth identifying online job opportunities and changed mindsets towards the opportunities in the job market. Institutions of higher learning have continued to narrow the gap between online courses and the long-established face-to-face course style. Due to the expansion of such courses, and the increasing online apps, youths enrolling for such programs have had to use digital technology and learn skills to use different software as they explore participation in the job market.

4.2.3 Online business marketing enterprises (E-commerce)

Online business enterprises have created employment opportunities by promoting export-oriented, labor intensive industries and education. Youth constitute the bulk of online sellers and buyers. Uganda's Digital DataRe Portal (figure 7 below) indicates growing trend in using social media platforms to enhance enterprises through online marketing (e-commerce) and shopping apps but remain largely unsophisticated, and mainly among the middle class. The most used advertising business platforms are Facebook, Twitter, Instagram, and LinkedIn. There are also pockets of the youth that started using WhatsApp and Tik-Tok for business enterprises. Age restrictions on all platforms mixed with under reporting to evade online taxi obligations are common challenges.

Figure 7: Trends in Uganda's Social Media Statistics



Source: Uganda Digital DataReportal

One of the most common platforms that Ugandans have embraced is Jumia with over 800,000 monthly users (Linkedin, 2023), the largest pan-African e-commerce platforms designed to innovate ways and methods for reaching rural and remote users. Jumia has the widest sales program, with a big force of independent sales agents to expand Jumia's reach. The agents are usually youth who must have a smartphone, internet access, a valid email address, and must have undergone basic training to be able to register an account with Jumia. The sales agents get a commission from every transaction, thereby contributing to productive livelihoods. More people have been able to overcome the trust challenges because Jumia has gained significant popularity across Africa.

4.2.4 Mobile money users

The widespread use of "mobile money" and the rapid growth of mobile phone usage currently at 63.8% facilitates online marketing. While there are only 19 million bank accounts in Uganda, and fewer bankers using Debit and Credit cards, there are about 26 million active mobile money accounts. Mobile money business is majorly being driven by young people who have access to internet and are aware of the high demand for convenient and affordable products and services.

4.2.5 Digitization of agriculture

According to the NLFS 2021, 33% of youth are employed in agriculture, forestry and fishing. More males (34.6%) than females (29.7%) are employed in the sector. Government launched the

agriculture digitalization programme to encourage youth into farming to boost their income and improve the country's economy (FarmersReviewAfrica, 2023). The Programme helps farmers understand the problems they face through the value chain, enabling them to develop technology-enabled solutions that are driven by market demand and tailored to the needs of young growers. The programme provides digital platforms that bring multiple service providers, ranging from input suppliers, insurance companies, and financial services providers together to serve young farmers and allow service providers to more easily reach last-mile customers in rural regions that have been neglected for a long time, while also providing the end user with lower production costs, including operational costs.

4.2.6 Online access to transport

In Uganda, there are digital apps that have revolutionized the transport industry. Safe boda, Taxify, Uber and other transport apps have offered opportunities for full time but flexible employment to those who own vehicles and boda bodas. This transport industry is also equally dominated by youth. The business from these transport apps accounts for between 5 to 15% of the national Gross Domestic Product (BusinessTimes, 2022).

4.2.7 Entertainment industry

The gambling industry which is adored by youth in Uganda has had secondary effects on other industries such as hospitality and tourism. The industry has also created jobs in areas such as casino operations, customer service, and marketing. The film industry also creates job opportunities, from actors to behind-the-scenes crew, and generates revenue for related industries such as catering, transportation, and advertising. The rise of streaming services such as YouTube has contributed to the growth of the entertainment industry.

4.2.8 Adoption of mHealth

The utilization of mHealth as a transformative and innovative approach that leverages mobile phones, tablets, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices to support healthcare delivery has not only emerged as a viable solution to enhance accessibility and utilization of healthcare services, it has also increased the number of youths leveraging such platforms for employment opportunities. Ugandan Youth working with health development agencies, such as UNFPA, UNICEF and Civil Society have become more innovative.

For example, Reach A Hand Uganda (RAHU)'s SAUTIplus TV, platform offers online TV series and Movies intended to revolutionize access to SRH edutainment in Uganda.

4.2.9 Artificial Intelligence (AI) and labour productivity

AI patent applications generate an extra-positive effect on companies' labor productivity. Research has proved that while technology generally increases productivity, AI may diminish some of today's valuable employment opportunities because fewer people may be required to participate in the labour market, with increasing technological advances especially, the robotics and artificial intelligence. Depending on the nature of the job, a worker may be augmented by technology or in competition with it. For example, technological advancements in robotics can diminish wages and employment opportunities for manufacturing workers. However, technological change does not necessarily produce unemployment, and, in the case of AI, cognitive technology may actually augment workers, who are mainly, youth.

4.3 Factors facilitating digital economy among youth in Uganda

There is a big potential of digital economy to create more jobs in Uganda amidst the struggle to increase internet penetration rate, reduce cost and enhance access to Smart phones. This section explores some of the facilitating and constraining factors to digital economy.

4.3.1 ICT eloquence and skills

ICT eloquence refers to the level of proficiency and understanding of concepts of ICT. There are variations in eloquence by gender, residence, parental encouragement, particularly among those in school, despite policy and curricula reforms and expansion of ICT Infrastructure. Confidence levels in use of computers vary by gender with males rating higher than females. Additionally, females use computers predominantly for communication while males use it much more for entertainment. To promote and accelerate access to education (including for IDPs, refugees and stateless persons) using ICTs, government supplied computers to government secondary schools and installed Digital Science Software (DSS) and Virtual Laboratories Software (VLS) on the computers in the schools (GHS, 2023). The Digital laboratories Software enables learners to attend practical lessons and follow science lessons and do self-assessments without going to the physical laboratory. There are gender differences in the way parents support their children to use technology

(Álvarez, Torres, Rodríguez, Padilla, & Rodrigo, 2013). Parents exert more regulatory parameters to girls than boys and as such use of internet and television in African students is minimized more among daughters than in sons.

4.3.2 Digital Divide

The digital divide is the gap between those who can access ICT and those who cannot. Understanding the digital divide requires to not only integrate the disproportions relating to access to ICT but also the different ways of using it (Gonçalves, Oliveira, & Cruz-Jesus, 2018). In order to bridge the digital divide, the necessary online skills should be achieved by focusing policy not only on improving access but also investing in training.

4.3.3 Transitioning from school to work in the digital era

Cyber School Technology Solutions (CSTS) an education-service Company, in partnership with Ministry of Education & Sports (MoES) and Uganda Communications Commission (UCC) developed Digital Science & Virtual Lab (DSVL), a software that has been active in secondary schools across the country since 2006. The DSVL software contains the Ugandan O-level science curriculum digitized, with 2D and 3D animations, captivating images, sound effects and clear simplified explanations of concepts to make the rather difficult science concepts easier to understand, learn and to remember. It's easy to use and comprehend yet uses no internet but installation of the curriculum on a laptop or desktop. Gayaza High School was the pioneer school for DSVL and the school has received many international awards for championing the transition of school-based information into the work space.

4.3.4 Exposure to a wider virtual network

Networking is key to finding and maintaining jobs, conferences and scholarship opportunities. Digital technology makes networking all the easier and more expansive. As such, the success of online platforms requires digital literacy on both sides: Youth need to be comfortable communicating and sharing their skills online, and employers need to know how to use social media and other digital technology platforms to share information and advertise positions directly to the youth.

5.0 Conclusion

The slow but expanding access and use of digital technology among youth is likely to address the problem of youth unemployment in Uganda. Numerous information and communication technology (ICT)-based innovations, including the Internet, social media, artificial intelligence, and cloud computing, are altering the labor market and improving the position of youth in the digital labour market in different development sectors of NDPIII.

This study demonstrates that digital transformation has created some job opportunities across all industries, which contributes to lower unemployment. The burgeoning digital economy has also expanded the ways in which digital technology can be used for communication and aids in helping youth get above the conventional limitations of the labor market. As a result, conventional ideas about employment and the workplace are being challenged, and young people can now enter the labor market at any time or location. Digitalization is therefore a potential strategy to address youth unemployment and create wealth, if Uganda can overcome the longstanding obstacles among which are, infrastructure bottlenecks, the cost of internet and inclusive education to foster digital skills and capacities.

6.0 Policy recommendations

1. Uganda must leverage digital technologies to promote entrepreneurship. Interventions across the entire digital ecosystem to boost youth employment are needed to prepare youth for the current and future world of work, if government overcomes barriers and bottlenecks to digital transformation.
2. Government should strengthen the education system to equip the workforce with adequate digital skills that match the labor market
3. Mindset is a big challenge at all levels of education. It is therefore important to not only invest in software and hardware but in changing the mindset of youth in proper utilization of digital technology to earn a living rather than use technology as a form of betting or entertainment. There is also an urgent need to introduce advanced digital skills not just in the universities but also in TVETs as well to nurture more software developers.

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